ATEME NVR User Manual

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Author(s): ATEME
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WELCOME

Thank you for choosing an Ateme product.

In this document, you will find all the useful information to help you understand and use the Ateme product you have purchased.

Upon reading this document should you have any further questions, please feel free to contact our authorised resellers or the Ateme technical support team.

Ateme.

ATEME

For over 15 years Ateme has been consistently at the forefront in the design and manufacturing of complex audio and video signal processing systems (hardware and software solutions). We pride ourselves on bringing best of breed technology to the marketplace. As experts in video encoding, we have considerable experience in the field of compression algorithms, including JPEG, MPEG-2, MPEG-4 Simple Profile, Advanced Simple Profile, and Advanced Video Coding (MPEG-4 AVC/H.264). Building on this wealth of experience we introduce to the market our NVR software solution.

Table of Contents

1. Notations

Note
This symbol denotes important points and information that we wish to draw your attention to.

Warning
This symbol denotes a warning and should be paid particular attention to.

2. Purpose of document

This document has been compiled to give the reader a basic understanding of the Ateme NVR product purchased. It has also been written to enhance the user's experience of the Ateme solution by enabling the reader to better understand the technology contained within.

3. Product Description

3.1. Overview

The Ateme NVR (Network Video Recorder) is a software based solution that manages the recording of network video security streams. The current system has been designed to integrate into an existing Video Security Surveillance system.

The current version of the product supports both H.264 and MPEG4 video streams for which Ateme is a Market Leader. AAC audio is also supported.

The powerful recording Engine has been optimized to provide maximum performance enabling efficient recording that will maximise search and retrieval of video and ensure the best possible start for the management of your Video Security System.

The Ateme NVR was designed with flexibility and scalability in mind. Installation of this software will turn a standard PC into a network video recording system.

3.2. Product Features

- Powerful recording engine - Centralized recording of video IP streams (MPEG-4, H.264) + AAC audio
- Scalability - Multistream recording (>50 simultaneous streams)
- Continuous Recording on a circular buffer with automatic cancellation
- Events recording on alarms
- File extraction & possibility of VOD streaming with a streaming server
- Key frame only recording
- Immediate replay of the records in streaming
- Recording on local or remote Hard Disk
- Secure access over the Network
- Management via user friendly web interface
- Interoperability

3.3. Recommended NVR system Install requirements

The PC (Server) that the Ateme NVR runs on should adhere to the requirements as stated below:

- CPU: XEON Quad Core E5320 1,86GHz
- LAN: Card Gigabit Ethernet
- Memory: 4GB of RAM
- Hard Disk: At least 320GB SATA (3 separate disks are required)
  - Disk 1 – Operating System
  - Disk 2 – Video Buffering
  - Disk 3 – Video Extractions
- OS: Windows 2003 Server SP2 /XP Pro SP2
- File System NTFS is the only file system supported
- Browser Microsoft Internet Explorer v6.0/ Mozilla Firefox

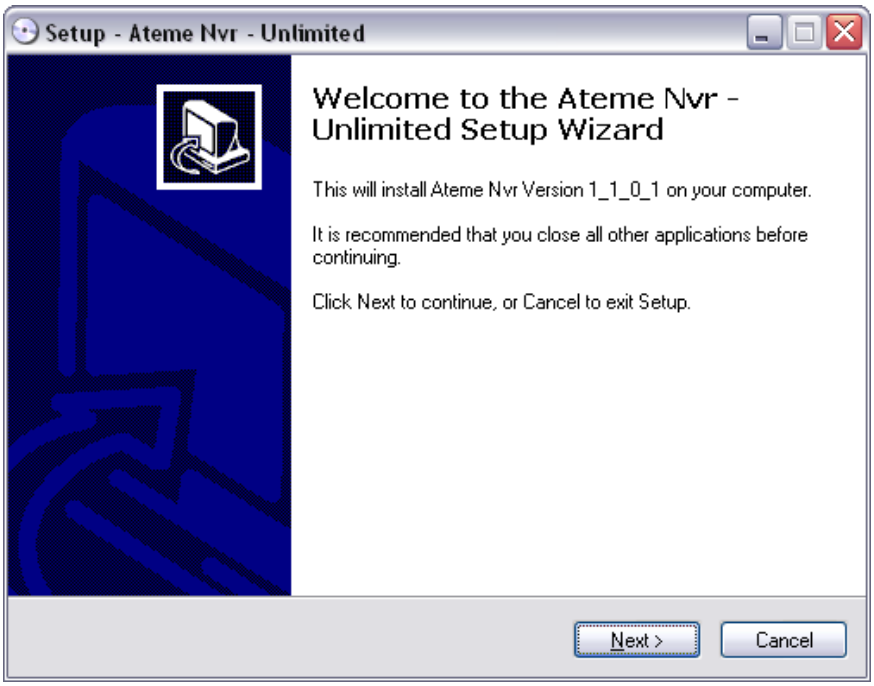
In order for the NVR to function it is imperative that the system have at least 3 individual physical disks i.e.1 disk for the Operating System – 1 disk for the video buffers and 1 disk dedicated to the video extractions. Ideally the 3 disks should be in a RAID 5 configuration.

4. Installing the Software

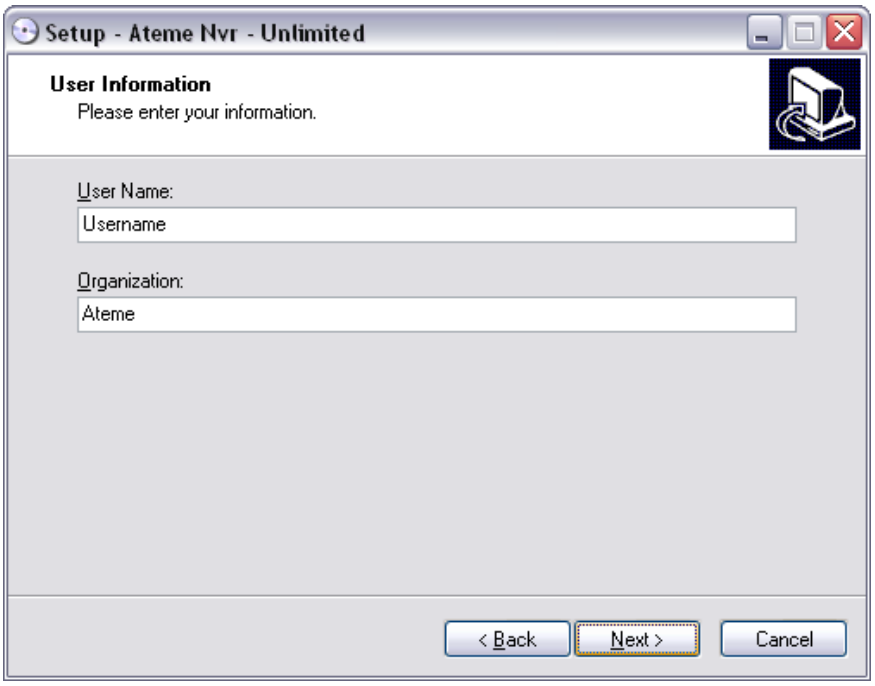
Run the install application by double clicking on the supplied atemeNvr.exe file.

- The user will have the choice of either French or English as the NVR software language.

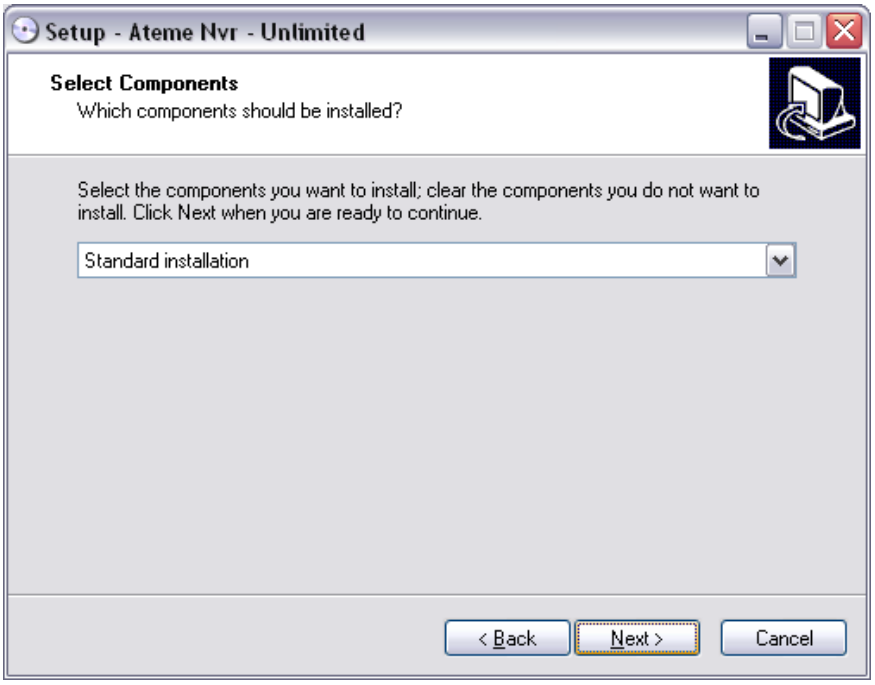
- Once the language has been chosen the user will be prompted to chose “next” in order to install the NVR application



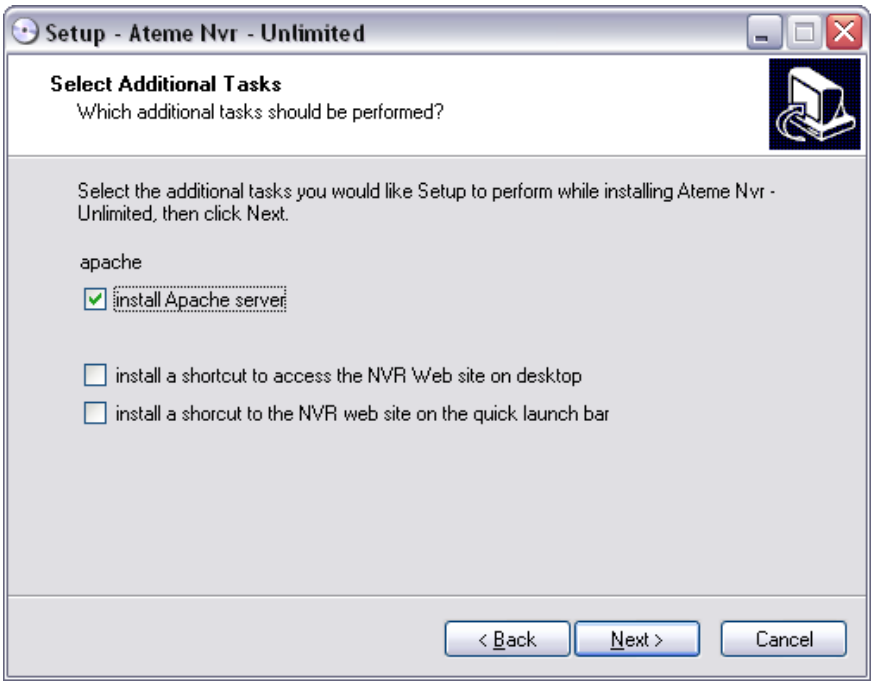
- For licensing purposes the next step is to input a username and Organisation name



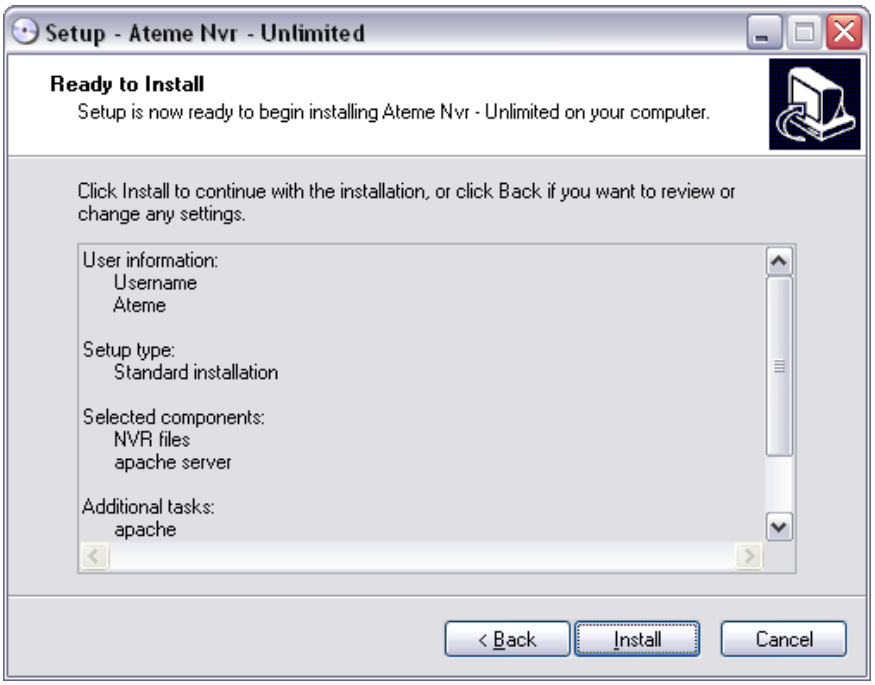
- Accept the “Standard installation” default by clicking “Next”.



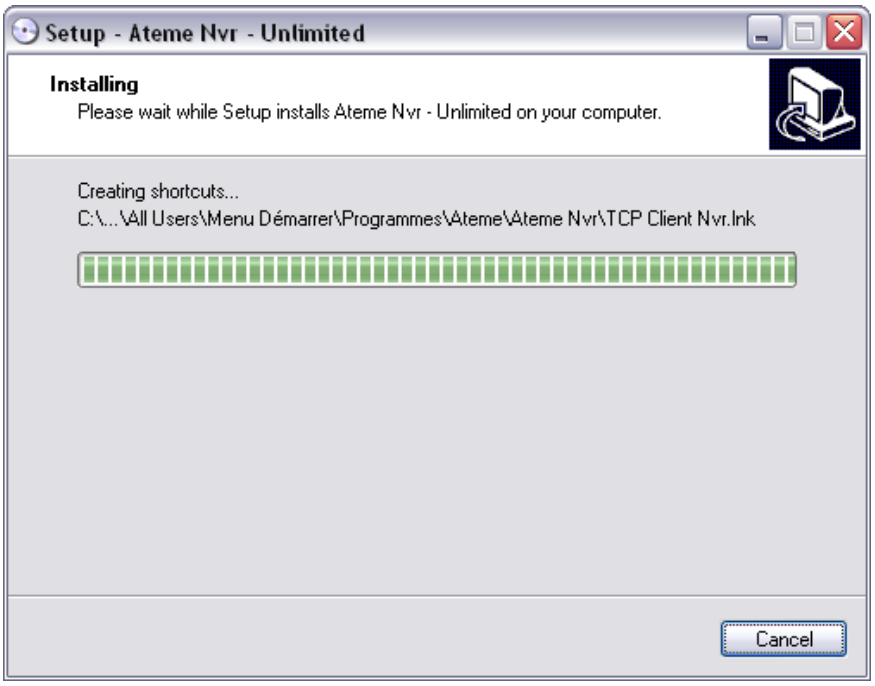
- From the following options install the Apache server and then choose the settings that best suit you.



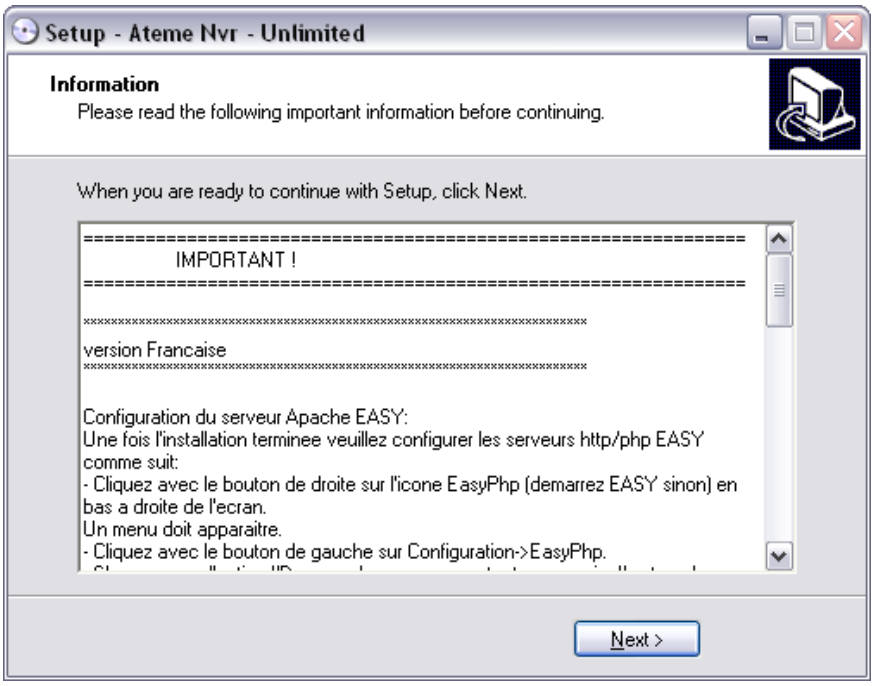
- If you are satisfied with everything then click on “Install” to continue with the installation.



- The user will be able to monitor the progress of the install via the install GUI.

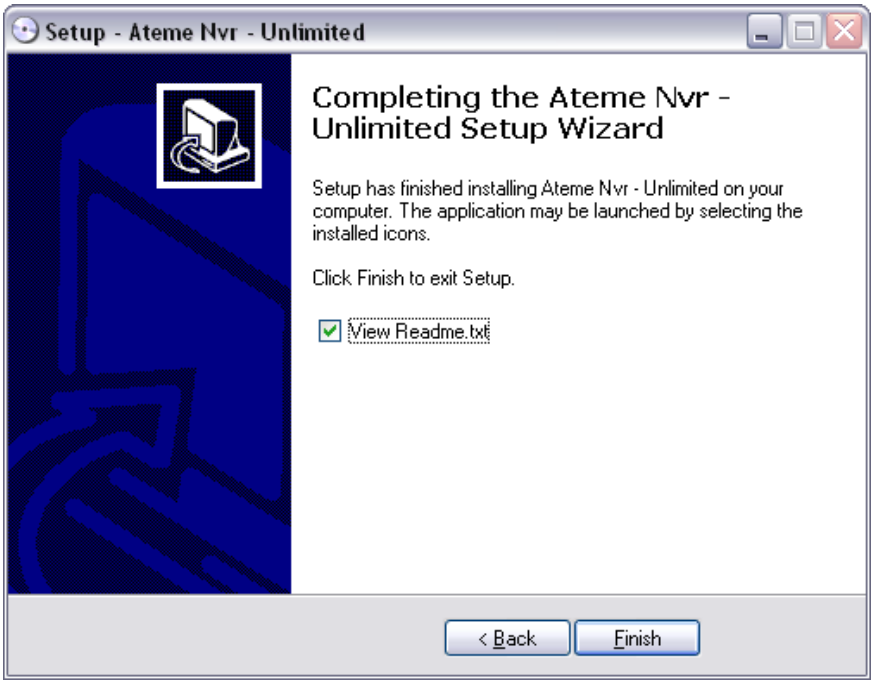


- Once the below information has been read click on “next”.



- That’s it. The installation of the NVR software is complete. The “View Readme.txt” will be automatically checked. Click on “Finish” and the Installation window will close and you will be presented with the readme file.

It is recommended that the user reads the contents of the readme file prior to using the NVR.



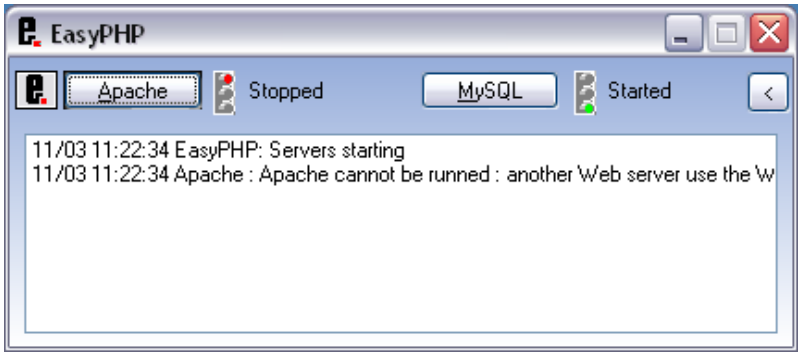
5. Operating and Managing the NVR management system

5.1. Starting the NVR

- Start the application “EasyPHP” from the C:\Program Files\EasyPHP1-8 directory.

EasyPHP (Apache) gets installed when you run the atemeNvr-1_0_0_0.exe NVR installer application.

If you have issues starting the Apache service due to the port already being in use then you will have to manually stop the IIS (Internet Information Services) service prior to starting the Apache Server. The reason for the latter is that the IIS service uses the same port as Apache.

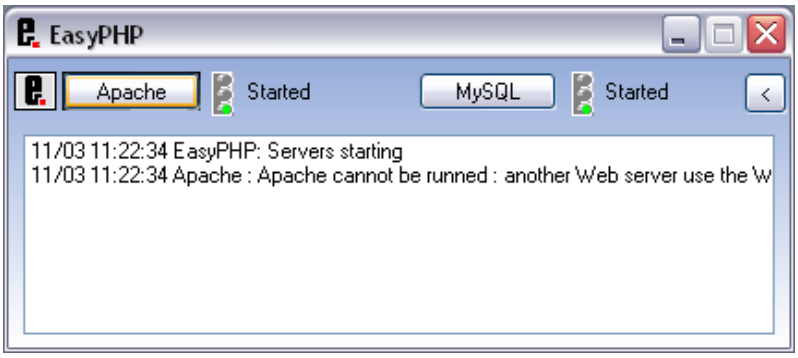


The easiest way to stop the services in question would be to create a .bat file containing the single line *net stop iisadmin*

Once you have saved the text file with the extension .bat it will display an icon as the above picture shows. To run the ".bat" file and therefore stop the IIS services; simply double click on the icon. At the prompt please specify "yes" in order to stop the services.

If you have any problems stopping the IIS services then please contact your Systems Administrator or someone from the ATEME support team.

- From the EasyPHP interface start the Apache and MySQL that will control the NVR. These services may already have been started when the EasyPHP.exe was run. Remember that the IIS service may have to be stopped prior to starting the Apache service.



- The apache server must be configured by the user, as described in the readme.txt file. Therefore it is important to read this before using the NVR.
- The next step is to start the NVR service. From the start menu navigate to the Ateme NVR install directory (C:\Program Files\Ateme\Ateme Nvr) and run "**Start the NVR service**"

Once EasyPHP, the apache service, the MYSQL service and the actual NVR service are all running you are ready to access the Management console.

5.2. Licensing and Versions

5.2.1. Versions

The ATEME NVR is available in 2 versions:

VSR-1000-VL: Network video recorder with a recording license for 1 stream. This is available for H.264 and MPEG-4 streams.

Only ATEME video encoding products are supported with the NVR.

VSR-1000-TM: Network video recorder with license for 1 transcoded reading head. This version of the product includes additional transcoding functionality. Transcoding is the direct digital-to-digital conversion from one format to another.

Transcoding is the direct digital-to-digital conversion from one format to another. In the case of this current version of the ATEME NVR, it is the process of converting a H.264 encoded stream to H.264 but in a format suited to the communications network that the target decoding device will use to receive the video stream e.g. ADSL, ISDN or Cellular. The “create a reading head” function with the standard version has been modified so that now a transcoding reading head can be created.
The process involves decoding/decompressing the original H.264 data to a raw intermediate format in a way that reflects standard playback of the video content, resizing the decoded video and then re-encoding this into the target H.264 resolution. The re-encoded H.264 video is then streamed over the chosen network where it can be decoded by compatible devices.

Only downsizing is currently supported when resizing the original H.264 video stream.

If the original stream has audio then it will be filtered (removed) from the transcoded stream.

For further information on the transcoding feature please consult the TCP integration guide that gets installed with the installation of the NVR.

5.2.2. Licensing

If a customer requires additional licensing for either product (**VSR-1000-VL** or **VSR-1000-TM**) then they need to contact their ATEME sales representative and quote the product reference, stating the amount of additional licensing required.

Once additional licensing has been successfully purchased the customer is then required to send an email to support@ateme.com detailing the MAC address for the network card of the NVR server. Support will then send the customer a licensing file to activate the Server. The customer then needs to place this licensing file into the install directory of the NVR system i.e. C:\Program Files\Ateme\Ateme Nvr.

5.3. The Web control interface

Before continuing with the below section it is important to note that the current NVR can do far more than the web interface currently allows. The latter is possible through use of the NVR SDK. The current interface is only a configuration interface for record creation and not an interface for on demand streaming, .mp4 creation, disk management etc. The supervision aspect of the NVR is to be implemented in a future release.

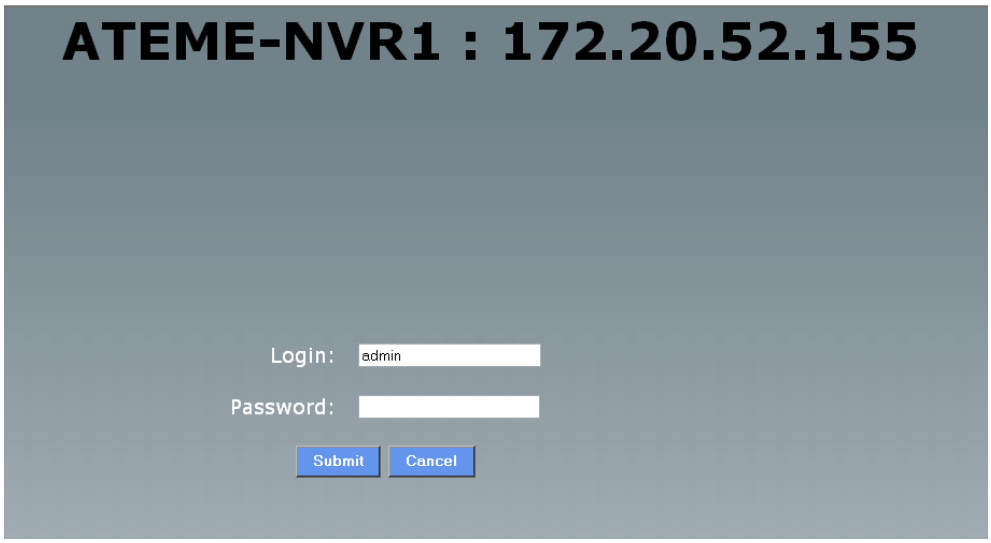
Double-click on the icon named “Open the Web HMI of the NVR”. The icon should be on the desktop, if when installing the NVR you choose the “install an icon on the desktop” option. Once the web interface is started you will be presented with the following:

The hostname and IP address of the Server that you are connected to should be displayed at the top of the page. This is an important feature where many NVR’s are concerned.

A remote NVR e.g. 172.16.16.238 may be accessed by any other PC on the same IP network.

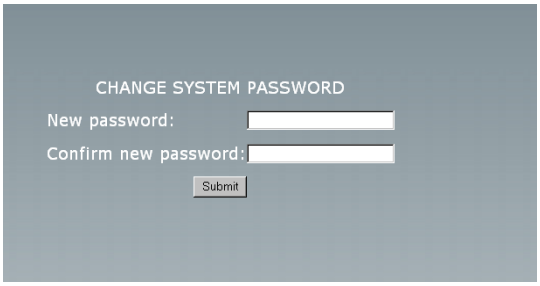
- If the user accesses http://172.18.18.238/nvr, then the web interface will display "pc-name : 172.18.18.238".
- If the user accesses a local NVR using the NVR menu shortcut, then the local address 127.0.0.1 will be used. This is why you see "localhost : 127.0.0.1" in the screenshots contained in this user manual.

If the user accesses a local NVR through the PC's IP address http://<ip address>/nvr, then the web interface will display "<pc name>:<PC IP address>" . The latter can be seen by the following screenshot;



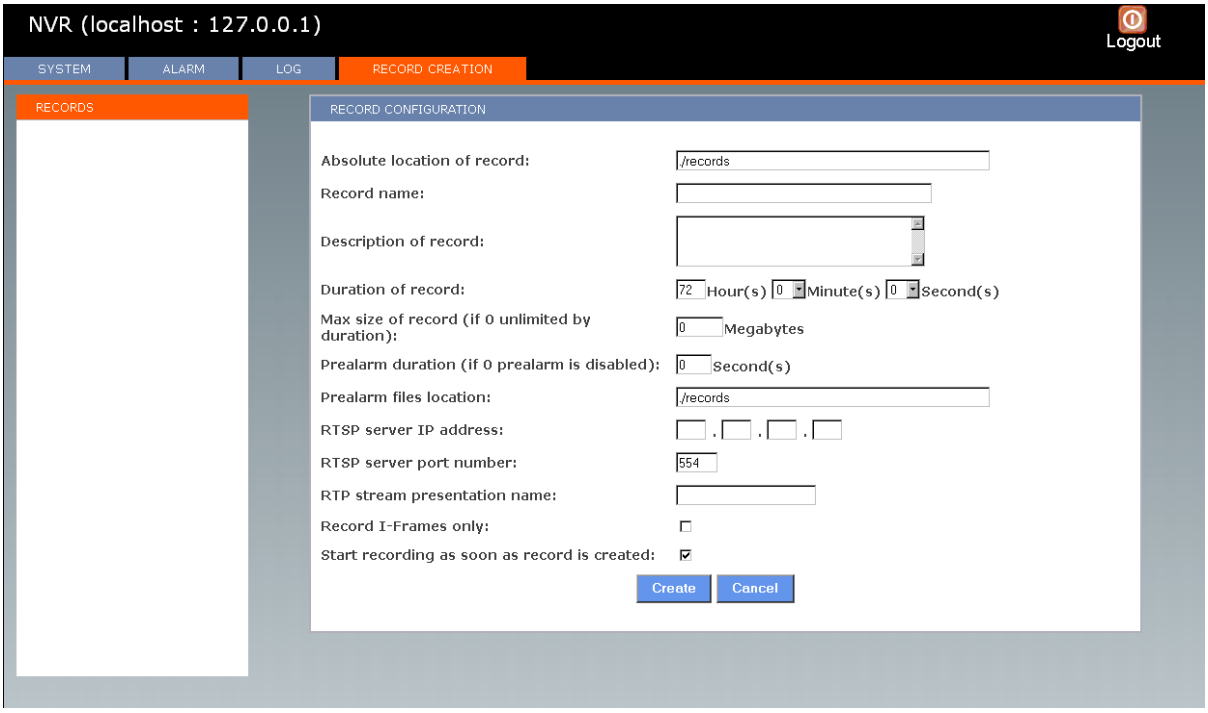
Upon first login the user will have to supply the default username and password i.e. admin/admin.

When you have successfully logged in for the first time you will have the option to change the system administrator password:



After typing and retyping the new password click on the “Submit” command button. You will then be presented with the below NVR configuration page. The Web Interface is divided into 4 tabs which allow you to manage the NVR system.

RECORD CREATION TAB



From this page the user creates and configures system records. The following is a brief description of the options available from this section.

Absolute location of record

This is the path of the directory where the recorded stream is to be saved.

The user will have to create this directory prior to specifying its path here otherwise they will not be able to successfully create the record i.e. the user will have to create a directory on their disk to store records and then input the full path to that directory in the input box provided here.

Record Name

It is beneficial to use an appropriate name to help identify the record. The user can specify up to 64 characters here.

Description of the record

The user should take the time to fill out this section when creating a new record as the information inputted here can be very useful when managing many video stream records together. The information that is inputted here can be very helpful when trying to understand record and video stream properties. The user can specify up to 64 characters here.

Duration of record

This specifies the length of the record to get written to disk. This is important due to the fact that each record is a circular record. The term “circular record” refers to the duration of time that the user specifies to record to the disk. Circular records are typically run permanently for all stream records. Each time the record duration is reached, the beginning of the circular record is automatically overwritten with new record files. The user has to set the number of hours/minutes/seconds after which the oldest data gets overwritten.

In the event of the **“Max size of Record”** being reached then the **“Duration of record”** setting will not be considered.

Max size of Record
This setting is convenient if you need to limit the record file size due to disk space limitations.

Prealarm duration
This represents the duration of time that recording will happen prior to an alarm being raised. If a user inputs “10” here then should an alarm get raised recording will get recorded 10 seconds prior to the alarm occurring.

There is actually no alarm signal itself handled by the record, only commands like "pause", "resume"… The prealarm duration sets the duration of small circular records, named "prealarm record", whose oldest data are written inside the main record. This way the main record can be handled as an "event only" record, created in pause state. If a resume command is ordered, the main record will write data from the past (prealarm duration) instead of the present.

The latter is probably best explained by the aid of an example. Imagine your camera is watching a door and you trigger the resume command when the door is opened (using an external program). If you set a prealarm duration of 10 seconds, then the main record will write the sequence starting 10 seconds before the door was opened.

The user has to implement the alarm through the aid of the NVR SDK if they have purchased it.

Prealarm files location
As alarm records are separate from normal video stream records then it is appropriate for them to have a different location than actual records. The user can specify their preferred location to store these files. They should first create the directory on the disk prior to specifying the location in the GUI.

RTSP server IP address
This setting represents the IP address of the video stream that you would like to record. This will have to be a network video source contactable by the NVR server PC.

RTSP server port number
The default port for the RTSP protocol is 554 on both UDP and TCP. Based on the latter the setting here is normally “554”.

RTP stream presentation name
This is the actual name of the presentation i.e. vsip2

This is case sensitive and therefore needs to be entered in exactly the same way as shown from the VSIP2 or other units Web Interface.

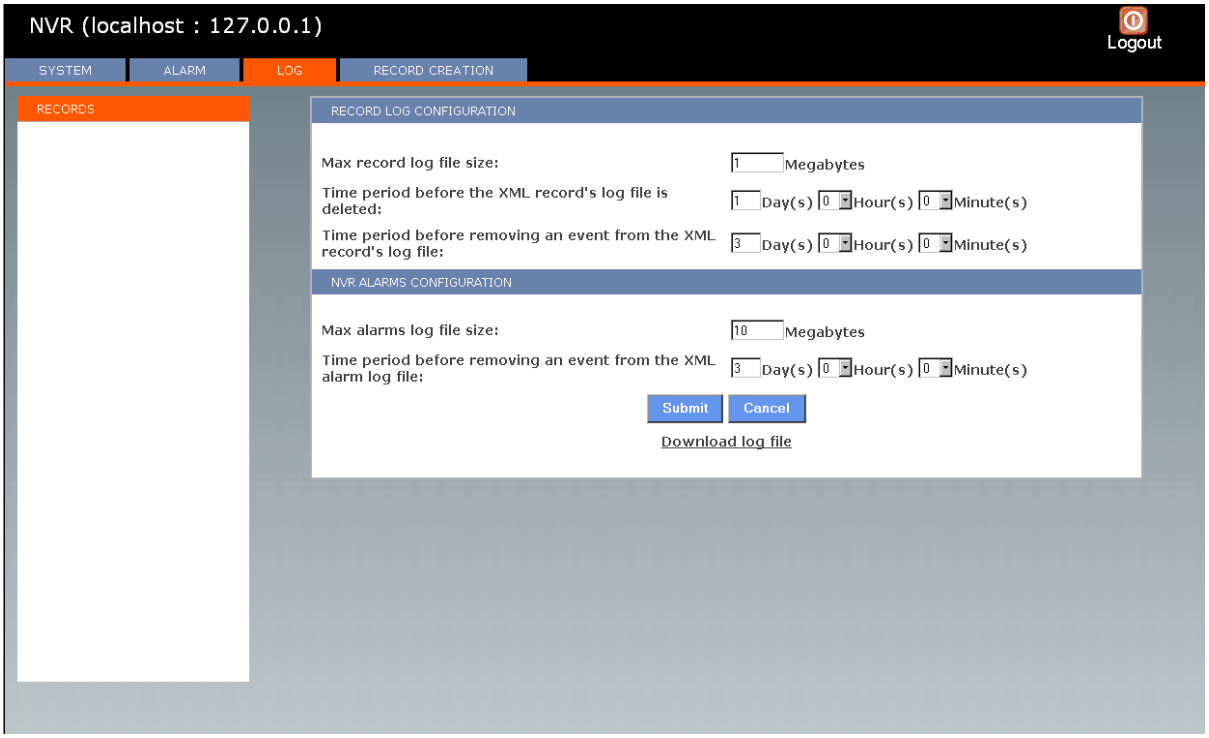
Record I-Frames only
By checking this setting only the "I" frames gets recorded. This will have a large impact on the amount of disk space required to record the stream i.e. as only "I" frames are being recorded less disk space will be required.

Start Recording as soon as record is created
If this option is selected then once the user has clicked on the "Create" button the record will start. The latter depends on the fact that the user has previously inputted the correct details for the successful creation of the record.

There are two command buttons that are at the bottom of the Web Page "Create" and "Cancel". If the user clicks on the "Create" button then the record that they have just configured should get created. If the user clicks on the "Cancel" button then this will undo any changes that have been made and then the user can restart the record configuration again.

An existing record cannot be modified once created it must be first deleted and then recreated again.

LOG TAB



The "log" tab configuration page allows a user to control the parameters associated with the record and alarm log files. The following is a brief description of the options available from this section.

Max record log files size
The figure inputted here represents the maximum capacity that the log file for a record can grow to.

Should the maximum record log file size be reached then the XML file loops and entries at the top of the file get overwritten with the latest ones.

Time period before the XML record's log file is deleted
Should a user wish to keep the log files for a longer duration than the default then they should increase the time as desired.

The record's log will only get removed after the time period has elapsed even if the actual record has been deleted before the time limit.

Time period before removing an event from the XML record's log file
Should the user wish to retain the logs for an event for a longer duration than the default, then they should increase the time as desired.

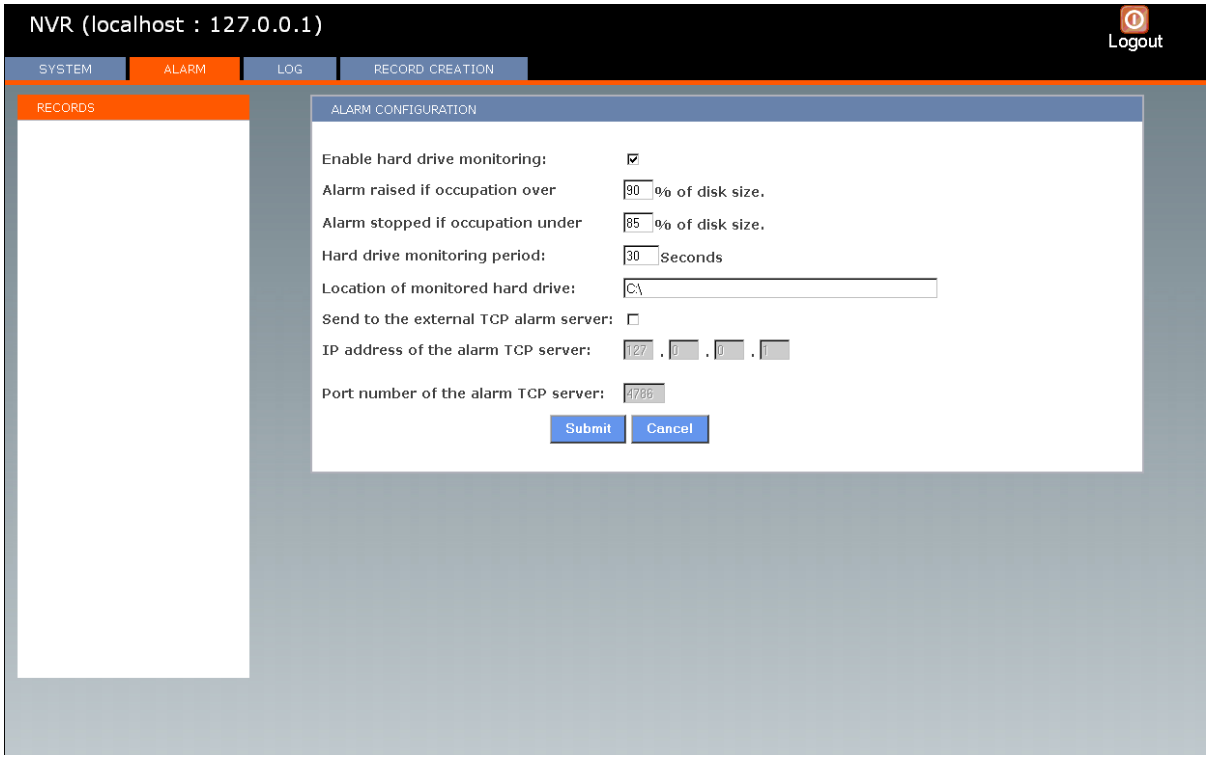
Max alarms log file size
The figure inputted here represents the maximum capacity that the log file for an alarm can grow to.

Should the maximum alarms log file size be reached then the XML file loops and entries at the top of the file get overwritten with the latest ones.

Time period before removing an event from the XML alarm log file
Should the user wish to retain the logs for an event for a longer duration than the default, then they should increase the time as desired.

The user can download the log file by simply left clicking on the "Download log file" link.

ALARM TAB



The “Alarm” tab configuration page allows a user to control the parameters associated with Alarms. The following is a brief description of the options available from this section.

Enable hard drive monitoring
By enabling this feature the NVR will automatically keep track of disk space usage and depending on the below configuration settings will notify the user when necessary.

Alarm raised if occupation over
If the disk space occupied exceeds the value specified here, then an alarm will be raised. A single TCP message will get sent to a remote TCP alarms server.

Alarm stopped if occupation under
When the disk space has fallen below the value specified here then the Alarm that was originally generated will be stopped. A single TCP message will get sent to a remote TCP alarms server.

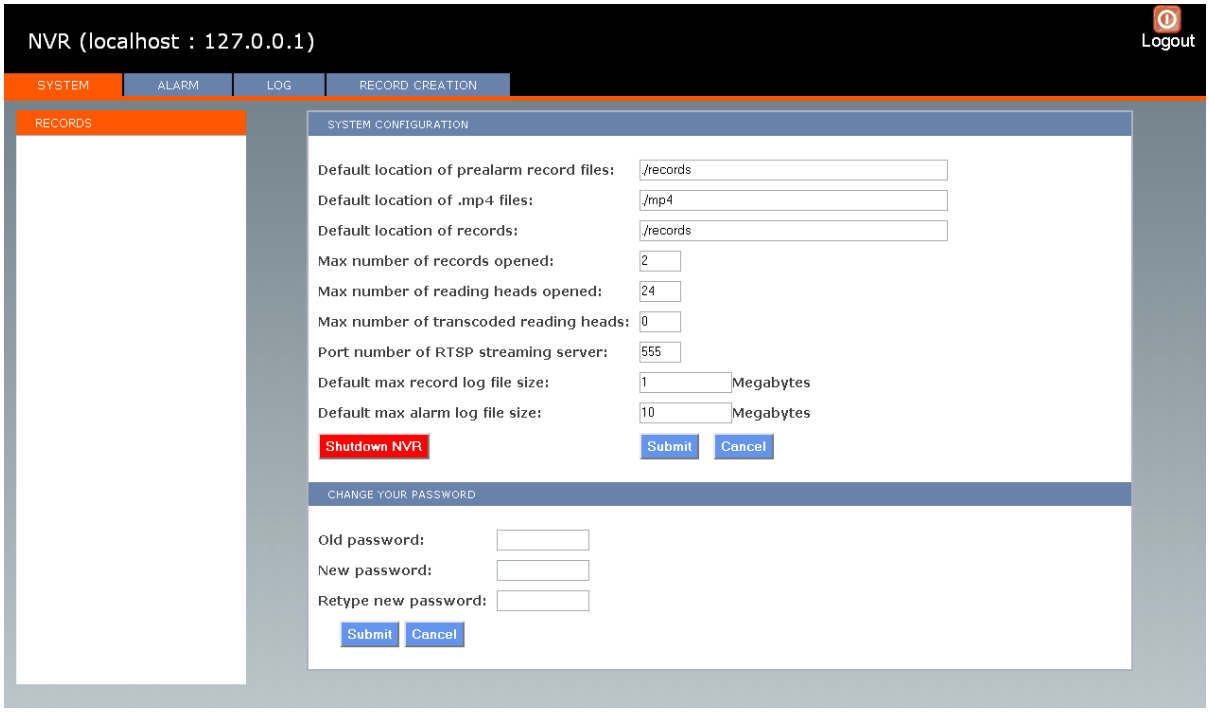
Hard drive monitoring period
The value inputted here represents the interval between each check carried out on the remaining hard disk space. The default check value is 30 seconds. It is important that an alarm gets raised quickly when a size problem occurs, therefore it is recommended to leave the default value as is.

Send to the external TCP alarm server
The user can enable this option if they want alarms to be sent to another server on the network. This would work very well if there is a Monitoring system on the network where people can be notified immediately should an alarm be raised.

IP address of the alarm TCP server
The user needs to specify the address of the server on the network that is to receive alarm messages from the NVR.

Port number of the alarm TCP server
This is the port number that the networked server accepts communication on. When you set TCP communication, you have to specify which port the TCP server will listen on.

SYSTEM TAB



Concerning "default" value parameters, when the user creates a record in the record creation tab, the Ateme NVR interface stores these values temporarily in an IE/Mozilla cookie (with a duration of 1 year).

- If the web browser does not have cookies enabled, of if the cookie was cleaned then the **record creation tab** displays the default values as defined in the **system tab.**
- When the web browser can retrieve the NVR cookie, then the record creation tab displays the last inputted values. This method is very convenient when creating many records with similar parameters, because each time the user will only need to change the record name and the video source.

Default location of prealarm record files
This is the absolute path to the prealarm record files. This probably will have to be changed by the user.

The setting here is the default value that will be proposed in the record tab. Instead of typing it each time a record is created, it is easier to set the value here.

Default location of .mp4 files
This is the absolute path to the video files. This will probably have to the reconfigured by the user.

Record files are encoded in a specific ATEME format in order to optimize the search and the streaming of recorded data. These .mp4 files are extracted from record files, upon an NVR SDK command.

Default location of records
This is the absolute path to the NVR record files. This location will probably have to be changed by the user.

 The setting here is the default value that will be proposed in the record tab. Instead of typing it each time a record is created, it is easier to set the value here.

Max number of records opened
This defines the maximum number of records that can be opened at any one time. The value inputted here depends on the users PC capacities; it is difficult to give an exact number as there are many parameters to take into account.

The latter depends on the following elements:

- The hard drive bandwidth i.e. the number of reading and writing accesses per second to the hard disk, the number of bytes per second that can be written or read.
- The hard drive structure i.e. disk speed and size.
- The IP bandwidth i.e. the number of UDP packets that can be received without loss, the latter depending on the bitrates of the recorded videos.
- The CPU load.

For example on a test system, you may create 51 records with 24 reading heads (with 25% of CPU used only) and 1 .mp4 extraction at a time, or probably more than 100 records and a couple of reading heads at a time. The problem is that reading and writing to the hard disk simultaneously dramatically reduces the performances of the system.

Max number of reading heads opened
This defines the maximum number of record heads that can be opened at any one time. As with the previous setting the value inputted here depends on the users PC capacities, it is difficult to give an exact number as there are many parameters to take into account.

Max number of transcoded reading heads
This defines the maximum number transcoded reading heads there can be on the Server. This depends on the amount of actual transcoding licenses were purchased. More information on the transcoding function can be found in section 5.2 of this document.

 There can be a maximum of 15 transcoding licenses per NVR Server.

Port number of RTSP streaming server
This is the port number that the streaming server broadcasts on. This should be different from the port used to receive video streams (554).

Default max record log file size
The default value here is low therefore the user may have to increment it depending on their system requirements.

The setting here is the default value that will be proposed in the record tab. Instead of typing it each time a record is created, it is easier to set the value here.

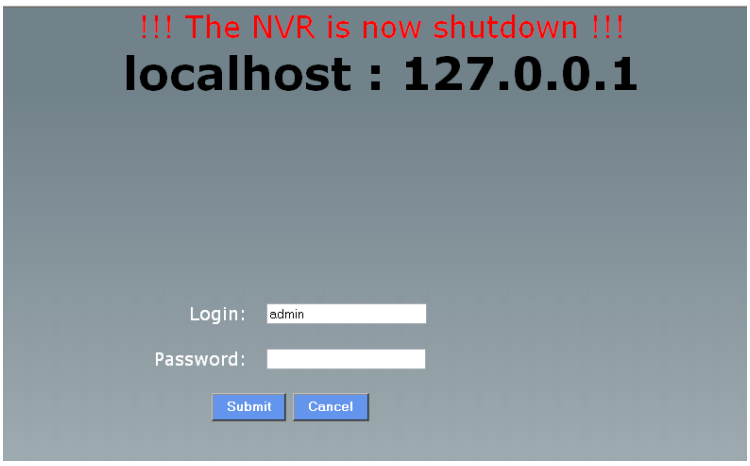
Default max alarm log file size

The figure inputted here represents the maximum capacity that the log file for an alarm can grow to.

The setting here is the default value that will be proposed in the record tab. Instead of typing it each time a record is created, it is easier to set the value here.

After every system configuration change has been made by the user they will be prompted with the following message “The new system configuration has been saved”

The “**Shutdown NVR**” command button allows the user to stop the NVR server. Once it is clicked they will be prompted with a confirmation message. If the “Ok” option is chosen then the NVR will be stopped and the following screen will be displayed.



The “**Submit**” command registers changes made to the NVR Server configuration.

The “**Cancel**” command button reverts to the previous settings prior to the user making changes i.e. by clicking on it the user reverts to settings since the last “submit” has occurred.

Change Your Password

The user can modify the system password from this section.

Old Password

In order to change an existing password you will first have to know the current password.

New Password

The user specifies the new password in the input box provided. The password is case sensitive so be careful when typing it.

Retype new password
This is essentially a safety check to verify that you have in fact correctly typed the new password. If the password typed here is the same as the password typed in the "New Password" section then the password will be accepted.

5.4. Playing recorded stream presentations

This is the job of another application (supervision). The NVR web interface is currently a configuration interface, not a command one. The functionality of connecting to and playing recorded video streams will be available in a future release.

5.5. Updating the NVR system

Should a newer software release become available then the user will have to uninstall the current version prior to installing the new release of the software

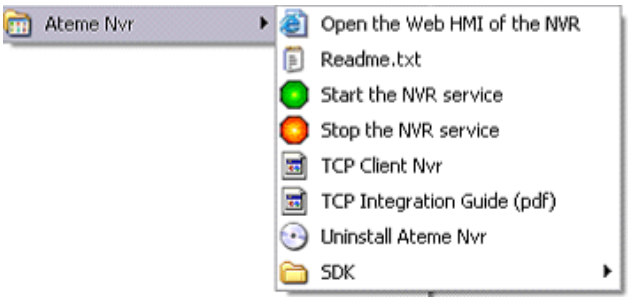
Before uninstalling the NVR, it is recommended that the user stop the NVR service in the correct fashion i.e. use the "Stop the NVR service" in the C:\Program Files\Ateme\Ateme Nvr directory. The uninstall procedure will stop the NVR anyway, however, the closing of records is managed better if the user manually shuts down prior to the uninstall being initiated.

The uninstall procedure does not remove the NVR configuration file. If the NVR is reinstalled with the latest release it will take into account the old configuration file.

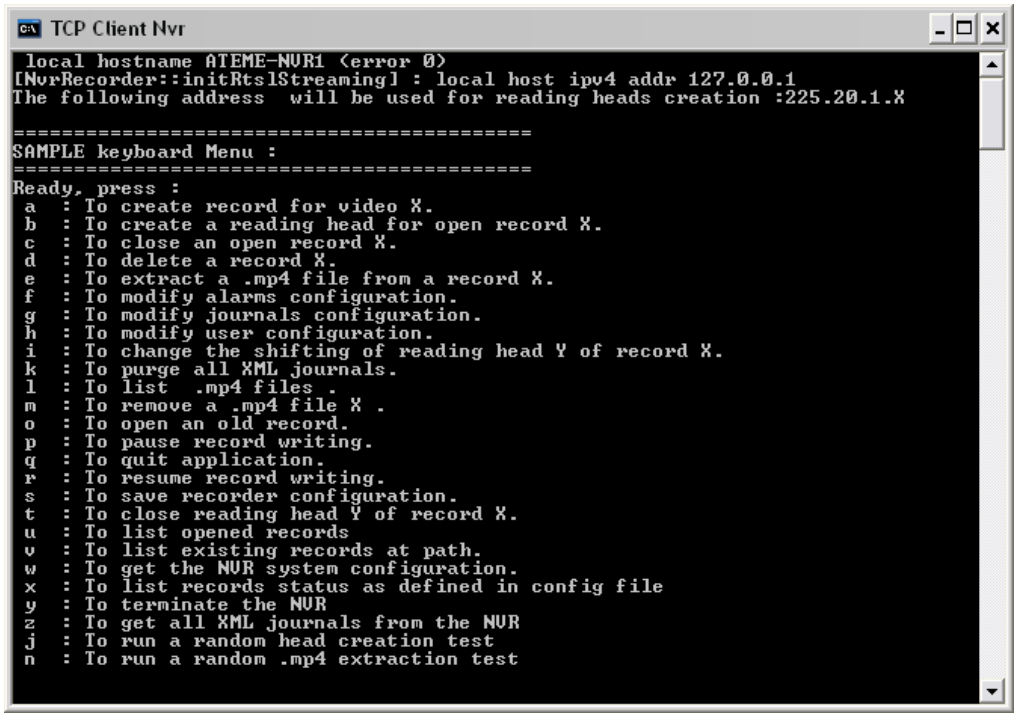
Uninstalling the NVR System does not uninstall the Apache software. Should a user wish to remove this they will have to uninstall it separately themselves.

5.6. The SDK for the NVR system

The SDK for the NVR can be found in the Ateme NVR install directory. The screenshot below shows the different applications that get installed including the SDK directory.



The below is an example of some of the actions that can be carried out via TCP command.



For full documentation on TCP commands please consult the TCP integration guide that gets installed with the installation of the NVR.

6. Support and Maintenance

In order to provide the best possible support to our customers, please submit to us by email any requests for assistance you may have. The support department can be contacted by using the following email address: support@ateme.com. We will be happy to provide assistance to resolve any issues that you may experience.